PATENT SPECIFICATION

755,506

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COMPLETE SPECIFICATION.

Improvements in Devices for Use in Dispensing Frozen Foodstuffs.

We, KUBRICE LIMITED, a British Company, of 1 Dansey Place, Macclesfield Street, Shaftesbury Avenue, London, W.1, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement :—

This invention relates to devices for use in dispensing frozen foodstuffs. It relates in particular to devices for use in dispensing ice cream and for convenience will be hereinafter described with reference to this particular application. It is to be understood, however, that no limitation is thereby implied.

The object of the invention is to provide an improved dispensing device by means of which the customer can serve himself.

A dispensing device according to the invention comprises a heat insulated structure comprising front, rear and side walls and a base providing a well for the reception of articles to be displayed, and provided with a heat insulated hood whereby the back and sides of the well and at least the greater part of the top of the well are enclosed, the device having a front opening that enables articles in the well to be seen and to be withdrawn by hand, said walls and base and said hood all being provided with pipes or ducts for the circulation of refrigerant.

In the accompanying drawings, Figs. 1, 2 and 3 are side, front and rear views respectively of a dispensing device according to the invention and of a deep freeze cabinet with which the dispensing device forms a unitary structure.

Referring to the drawings, the structure illustrated comprises a deep freeze cabinet 1 which contains, within the space 2, a refrigerating unit of any suitable type. The space 3 is a storage space for foodstuffs to be frozen, and may be provided with shelves (not shown). A door 4 at the back of the cabinet 1 permits access to the space 3.

The upper part of the cabinet proper is closed by a heat insulated transverse partition 5. The walls of the cabinet project upwardly beyond the partition 5, as shown. The upwardly projecting part 6^1 of the rear wall 6 is continued upwardly and forwardly as a sloping hood 7, the front end of which is set back to a small extent from the plane of the rear surface of the front wall 8 of the cabinet 1. The projecting part 8^1 of the front wall 8 is relatively short, so as to provide an opening 9 between the upper edge of the part 8^1 and the forward edge of the hood 7. The projecting parts 10^1 and 11^1 of the side walls 10 and 11 of the cabinet, together with the parts 6^1, 7 and 8^1, form a well which is completely closed apart from the provision of the opening 9. This opening 9 extends across the front of the structure (Fig. 2) and by reason of its lower edge being defined by the upper edge of the short projecting part 8^1 of the front wall 8, the opening 9 serves to define a well 12 the base of which is formed by the partition 5.

The well 12 and hood 7 are arranged to be fully refrigerated by the provision of tubing 13 connected to the refrigerant tubing of the cabinet 1, so that refrigerant from the unit in cabinet 1 can circulate not only through the walls of the storage space 3 but also through the parts 6^1, 7, 8^1, 10^1 and 11^1 of the container.

The hood 7 carries brackets 14 which support a glazed frame 15 for the display of a suitable legend relating to the articles which are displayed within the container, and which stand on the partition 5. A transparent plate 16 of glass or synthetic resin extends across the lower part of the opening 9.

In the use of the devices, articles, for example tubs or packets of ice cream, are

[*Price 3s. 0d.*]

placed in the well 12, from which they are taken as required by the customers. The articles are thus exposed so that the customers can see them and help themselves, but the articles are nevertheless kept fully refrigerated until taken by the customers.

A striking advantage of the invention is that the formation of frost from moisture within the container occurs substantially only on the inner surfaces of the walls 6^1, 8^1, 10^1 and 11^1 and on the underside of the hood 7. It has been found that little or no frost forms on the articles themselves, so that they remain attractive in appearance and easily identifiable and do not adhere together, as occurs in refrigerated open display cabinets. This advantage is due, at least in part, to the effect of the hood 7 and plate 16 in preventing warm air from blowing over the top of the well 12 and removing the cold air therein. In open display cabinets warm air can blow over the articles and such cabinets cannot keep ice cream solid.

In a modification, the well 12 may be provided with partitions extending from the front to the back of the well so as to divide the well into a plurality of elongated compartments, in different ones of which articles of different kinds may be displayed. Said partitions may also be arranged to be refrigerated if required.

The well may be loaded from the front, or if desired a door may be provided for this purpose in the rear part 6^1 or in one or both of the side parts 10^1 and 11^1. Replenishment of the container is a simple matter since a stock of the articles can be kept ready within the storage space 3 of the deep freeze cabinet 1.

The top and rear surface of the hood 7 may be curved and may merge smoothly into the rear surface of the part 6^1, instead of having the angular form shown. The inner surface may also be curved.

In another form of the invention (not illustrated) the dispensing device is not formed as a unitary structure with a deep freeze cabinet, but as a separate structure, which may be arranged to stand on a deep freeze cabinet and have its refrigerating tubing connected to the refrigerating system of the cabinet. Alternatively the device in this form may be mounted on any suitable support, for example a counter, shelf or showcase, and have its refrigerating tubing connected to an independent refrigerating unit, or to the refrigerating system of a deep freeze cabinet, disposed in any convenient position remote from the device.

A dispensing device according to the invention is particularly suitable for use in self-service restaurants or cafeterias in which various articles of food are placed on a counter or shelf and the customer helps himself to the required articles and loads them on to a tray. Ice cream not being suitable for display on open shelves or counters, where the available articles of food include ice cream it is normally kept until asked for in a dispenser, having a refrigerated well which serves as a receptacle for the tubs or packets of ice cream. When a customer asks for ice cream an attendant serves it to him from the dispenser. A device according to the invention obviates the need for an attendant to perform this service whilst ensuring that the ice cream is refrigerated until selected by a customer.

It will be understood that the term "refrigerant" used herein applies not only to the refrigerating media commonly employed in refrigerators, but to any suitable cooling medium, such for example as air at a suitably low temperature. The well may for example have ducts that are included in a closed circuit in which air circulated by a fan is blown over cooling means, for example solid carbon dioxide.

What we claim is :—

1. A dispensing or display device comprising a heat insulated structure comprising front, rear and side walls and a base providing a well for the reception of articles to be displayed, and provided with a heat insulated hood whereby the back and sides of the well and at least the greater part of the top of the well are enclosed, the device having a front opening that enables articles in the well to be seen and to be withdrawn by hand, said walls and base and said hood all being provided with pipes or ducts for the circulation of refrigerant.

2. A device according to Claim 1 wherein a sheet of transparent material is provided across the lower part of said opening.

3. A device according to either of the preceding claims wherein said hood projects forwardly and upwardly from said rear wall and extends between said side walls, said opening being formed between the upper edge of said front wall and the front edge of said hood.

4. A device according to any of the preceding claims, provided with a door which permits access to said well for the placing of articles therein.

5. A dispensing or display device substantially as hereinbefore described with reference to the accompanying drawings.

6. A device according to any of the preceding claims formed as a unitary structure with a deep freeze cabinet.

7. A device according to Claim 6 wherein the walls of said device are co-extensive with the walls of said cabinet and the said pipes or ducts are connected to the refrigerating system of said cabinet.

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PROVISIONAL SPECIFICATION.

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We, KUBRICE LIMITED, a British Company, of 1 Dansey Place, Macclesfield Street, Shaftesbury Avenue, London, W.1, do hereby declare this invention to be described in the following statement :—

This invention relates to devices for use in dispensing frozen foodstuffs. It relates in particular to devices for use in dispensing ice cream and for convenience will be hereinafter described with reference to this particular application. It is to be understood, however, that no limitation is thereby implied.

The object of the invention is to provide an improved dispensing device by means of which the customer can serve himself.

According to the invention a dispensing device comprises a receptacle having heat insulated walls and if desired partitions which divide it into a plurality of compartments, and refrigerating coils or ducts associated with at least the walls and partitions to provide individual refrigeration for each of said compartments.

A dispensing device according to one form of the invention is suitable for use in self-service restaurants in which the various articles of food are placed on a counter or shelf and the customer helps himself to the required articles and loads them on to a tray. Ice cream not being suitable for display on open shelves or counters, where the available articles of food include ice cream it is kept until asked for in a dispenser having a refrigerated well which serves as a receptacle for the tubs or packets of ice cream, and when a customer asks for ice cream an attendant serves it to him from the dispenser. The dispensing device, according to the invention, to be described obviates the need for an attendant to perform this service whilst ensuring that the ice cream is kept refrigerated until selected by a customer.

The device comprises a tray-like receptacle the base of which has a flat upper surface, the lower surface being provided with coils for the circulation of refrigerant, or being formed with hollow ribs which serve as ducts for the refrigerant. The four walls of the tray are composed of heat insulating material and are provided with coils or ducts for refrigerant. The said coils or ducts may be provided on the inner surfaces of the walls or if preferred may be embedded in the walls, being for example enclosed between a heat insulating layer forming the outer part of the wall and a metal plate forming the inner part of the wall. Within the tray are provided one or more partitions, of the same height as the walls, which partitions are parallel to one another and divide the space within the tray into two or more elongated compartments. Each of the partitions is provided with coils or ducts for refrigerant and the coils or ducts may be embedded within the partitions so that each partition has a single set of coils or ducts serving to refrigerate both sides of the partition, or each partition may carry two sets of coils or ducts, one on each side of the partition.

The various coils or ducts are connected in any suitable manner to one another and to a suitable source of refrigerant, so that the circulation of refrigerant effects refrigeration of the base, the two sides and the two ends of each compartment.

In the use of the device, tubs or packets of ice cream are loaded into the compartments, from which they are taken as required by the customers. The tubs or packets are thus exposed so that the customers can see them and help themselves, but are nevertheless kept properly refrigerated until taken by the customers.

The compartments are of a suitable width and length to receive a plurality of tubs or packets arranged in a single line. The width of each compartment is suited to the articles to be received so that the articles are in contact with or near to a refrigerated wall or partition at each side of the articles and at the base. The compartments may be arranged to receive different kinds of articles, for example packets or tubs of different sizes, and the compartments may differ from one another in width and/or length. When any compartment is exhausted or nearly so it is refilled by an attendant, who is thus required to give only occasional attention to the device.

If desired the two walls which are parallel to the partitions, i.e. the side walls, and one of the other or end walls may be surmounted by vertical glass panels. No panel is provided at the end wall which is at the front end of the tray, that is at the end nearest the customers. The provision of a heat insulating wall on each of four sides of the tray assists in maintaining a static volume of cold air within the compartments.

The device as described may be mounted on any suitable support such as a counter, shelf or showcase, the coils or ducts being connected to the refrigerant circuit of a deep freeze cabinet disposed in any convenient position remote from the device. If preferred, however, the device may be mounted

on the deep freeze cabinet itself, and if desired may be incorporated as a part of the cabinet, the usual heat insulating cover of the cabinet being replaced by the refrigerating base of the above-described tray. With the latter arrangement the device is disposed with the back of the tray, i.e. the end at which a glass panel is provided, nearest the side of the cabinet in which the door or doors is/are provided. Replenishment of the compartment is in this case a simple matter since a stock of the articles can be kept within the cabinet itself.

The heat-insulating walls of the tray may be of any suitable height and thickness; generally a height of at least three inches is desirable.

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755,506 COMPLETE SPECIFICATION
2 SHEET
This drawing is a reproduction of the Original on a reduced scale.
SHEET 1

Fig.3.

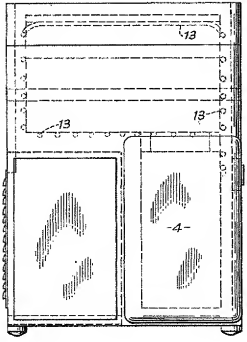
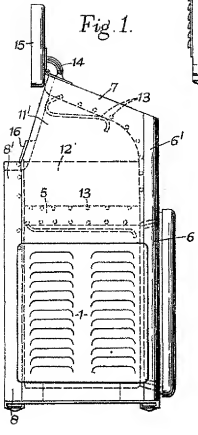


Fig.1.



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2 SHEETS This drawing is a reproduction of the Original on a reduced scale.
SHEET 2

Fig.2.